

Meeting 4 Notes
2/10/22

- Website: can replace files on the site, but can't edit the existing version
 - Will look into web tutorials, maybe Dreamweaver

Subsystem Review

- Field Device
 - Power Supply
 - Li-Ion Cell, LDO Regulator, battery protection
 - Professor: Worry about Li-ion battery over-discharge
 - ESP32 with PCB Antenna (WROOM)
 - Could use higher gain antenna with UFL than with PCB (only relevant regarding WiFi)
 - Pins: UART, SPI, I2C, Digital IO
 - Can set up board so that...
 - Can put FTDI chip on board with transistors to “kick DTR” (data terminal ready + request to send to set it to programming mode rather than hold reset and GPIO0 and release reset to boot programming mode) and control signals to put it into program mode
 - Professor has one version that does the reset on the GPIO0 (GPIO9 for us no?) for 6-pin programming
 - Serial Converters exist for 6 pin for 3
 - For programming, might not actually need header pins, can just have 6 ports for programming pins that can just be held in by friction
 - Can remap functions to different pins (as far as SPI or I2C)
 - Sensors- light (I2C), hall, temperature + moisture
 - ADC to free up pin space (only 19 pins to begin with)
 - Might not need one. 4 pins is probably sufficient without the complexity and cost of using the ADC
 - Maybe use a mounted magnet + “window-open sensor” (magnet on one side, relay on the other- sort of like window alarm) rather than hall sensor for naturally remote magnet
 - One ground, one pull-up resistor to IO pin
 - LoRa Transceiver (RFM)
 - IO pins, antenna pin, ESP w/Spi, header pins around
- Base Station Module
 - Power Supply- wall wart usb plug in
 - WiFi library to use WROOM and setup
 - Platformio can be used as editor with Atom and as an addition/replacement to Arduino
 - Arduino and Espressif framework, so you can use both/either

- WiFi as home network
 - Using html for team website and also for data log
- UI- through html and for the server
 - For next review: at least have some functionality, doesn't need to be pretty
 - WiFi:
 - SDNet- CapstoneProject Password
- Professor:
 - At least have the basics: use an I2C, use an SPI
 - Test each of the subsystems and ensure they have all the working pieces in place
 - Isolate, test, and complete, then assemble and put together
 - Need to plan how to differentiate between our systems

Problems + Challenges

- Differentiating between transceivers
- Proper transceiver functions
 - Determine whether receivers will always be on or not
 - User choice- could go for efficiency or responsivity
 - Will need to ensure the two can communicate at the same time- even if the field is designed to turn on/off